Title (en)

METHOD FOR THE SCALAR CONTROL OF AN INDUCTION MOTOR, PARTICULARLY AT LOW SPEED OPERATION, AND SCALAR CONTROL SYSTEM FOR AN INDUCTION MOTOR

Title (de)

VERFAHREN ZUR SKALAREN STEUERUNG EINES INDUKTIONSMOTORS, INSBESONDERE BEIM BETRIEB MIT NIEDRIGER GESCHWINDIGKEIT UND SKALARES STEUERUNGSSYSTEM FÜR EINEN INDUKTIONSMOTOR

Title (fr)

PROCÉDÉ POUR LA COMMANDE DE SCALAIRE D'UN MOTEUR À INDUCTION, EN PARTICULIER AU FONCTIONNEMENT À FAIBLE VITESSE, ET SYSTÈME DE COMMANDE SCALAIRE DESTINÉ À UN MOTEUR À INDUCTION

Publication

EP 3171508 A1 20170524 (EN)

Application

EP 15460104 A 20151119

Priority

EP 15460104 A 20151119

Abstract (en)

The invention relates to a method for the control of a squirrel-cage induction motor, particularly at low speed operation, and to a system for the scalar control of an induction motor powered by a frequency converter, which method improves the performance of the squirrel-cage motor, particularly at low speed operation. The method according to the invention is characterized in that in order to determine motor voltage values a system related to the set stator flux position is used, and the said value is determined based on set flux amplitude, frequency of field rotation and feedback dependent on voltage drops across the stator resistance. In order to eliminate any operating instabilities of the drive caused by feedback dependent on voltage drops, a feedback dependent on ripple of current component parallel to the space vector of the set stator flux is used, and in order to compensate slip, the constant value of the current component perpendicular to the space vector of the set stator flux is used. The system according to the invention has at its input a set frequency rate limiter FRL , which is connected via a flux forming module FFS , multiplier x and adder W 2 to one of the inputs of transformation unit T2 and is also connected via adder W 1 to a second input of multiplier x and to an input of integrator I . The output of integrator I is connected to the inputs of transformation units T1 and T2 . The second input of adder W 1 is connected via proportional term k M and low-pass filter LPF 1 to the second output of transformation unit T1 , the said output being also connected, via unit R s , which represents resistance of the stator, to the second input of adder W 2 . The first input of transformation unit T2 is connected via unit R s to the first output of transformation unit T1 , the latter being also connected to low-pass filter FDP 2 and adder W 3 . Inputs of the coordinate transformation unit T1 receive measured signals of motor currents, wherein one of the output circuits of transformation unit T2 is directly connected to one of the inputs of modulator MOD .

IPC 8 full level

H02P 21/04 (2006.01); **H02P 21/14** (2016.01); **H02P 21/22** (2016.01)

CPC (source: EP)

H02P 21/04 (2013.01); **H02P 21/141** (2013.01); **H02P 21/22** (2016.02)

Citation (applicant)

- PL 393380 A1 20120702 - ZAKŁAD ELEKTRONIKI PRZEMYSŁOWEJ ENIKA SPOŁKA Z OGRANICZONĄ ODPOWIEDZIALNO [PL]
- PL 291695 A1 19930322 - ZEG ZAKLAD ELEKTRONIKI GORNICZ [PL]
- PL 163825 B1 19940531 - ZAKLADY URZADZEN OKRETOWYCH FA [PL]
- US 3911340 A 19751007 - PLUNKETT ALLAN BARR
- US 6636011 B2 20031021 - SADASIVAM VINODKUMAR [US], et al

Citation (search report)

- [XA] US 2012091941 A1 20120419 - HONG CHAN OOK [KR]
- [A] US 6069467 A 20000530 - JANSEN PATRICK LEE [US]
- [A] EP 2034604 A1 20090311 - MITSUBISHI ELECTRIC CORP [JP]
- [A] JP S61147787 A 19860705 - HITACHI LTD

Cited by

CN116232150A; CN108054748A; CN113238518A

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

EP 3171508 A1 20170524

DOCDB simple family (application)

EP 15460104 A 20151119